

What Is Claimed Is:

1. An isolated nucleic acid molecule nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

(a) a nucleotide sequence encoding the HLF polypeptide having the amino acid sequence at positions 1 to 157 of SEQ ID NO:2) or the complete amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123;

(b) a nucleotide sequence encoding the predicted extracellular domain of the HLF polypeptide having the amino acid sequence in SEQ ID NO:2 (i.e., positions 1 to 101 of SEQ ID NO:2) or as encoded by the cDNA clone contained in ATCC Deposit No. 209123;

(c) a nucleotide sequence encoding the predicted transmembrane domain of the HLF polypeptide having the amino acid sequence in SEQ ID NO:2 (i.e., positions 102 to 121 of SEQ ID NO:2) or as encoded by the cDNA clone contained in ATCC Deposit No. 209123;

(d) a nucleotide sequence encoding the predicted intracellular domain of the HLF polypeptide having the amino acid sequence in SEQ ID NO:2 (i.e., positions 122 to 157 of SEQ ID NO:2) or as encoded by the cDNA clone contained in ATCC Deposit No. 209123;

(e) a nucleotide sequence encoding a soluble HLF polypeptide having the extracellular and intracellular domains but lacking the transmembrane domain; and

(f) a nucleotide sequence complementary to any of the nucleotide sequences in (a) through (e) above.

2. The nucleic acid molecule of claim 1 wherein said polynucleotide has the complete nucleotide sequence in Figures 1A and 1B (SEQ ID NO:1).

3. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in Figures 1A and 1B (SEQ ID NO:1) encoding the HLF polypeptide having the amino acid sequence in positions 1 to 157 of SEQ ID NO:2.

4. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence in Figures 1A and 1B (SEQ ID NO:1) encoding the extracellular domain of the HLF polypeptide having the amino acid sequence from about 1 to about 101 in SEQ ID NO:2.

5. An isolated nucleic acid molecule comprising a polynucleotide having a nucleotide sequence at least 95% identical to a sequence selected from the group consisting of:

- (a) a nucleotide sequence encoding a polypeptide comprising the amino acid sequence of residues n-157 of SEQ ID NO:2, where n represents an integer from 1 to 35;
- (b) a nucleotide sequence encoding a polypeptide comprising the amino acid sequence of residues 1-m of SEQ ID NO:2, wherein m represents an integer from 73 to 101;
- (c) a nucleotide sequence encoding a polypeptide having the amino acid sequence consisting of residues n-m of SEQ ID NO:2, where n and m are integers as defined respectively in (a) and (b) above; and
- (d) a nucleotide sequence encoding a polypeptide consisting of a portion of the complete HLF amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123 wherein said portion excludes from 1 to about 35 amino acids from the amino terminus of said complete amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123;
- (e) a nucleotide sequence encoding a polypeptide consisting of a portion of the complete HLF amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123 wherein said portion excludes from 1 to about 83 amino acids from the carboxy terminus of said complete amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123; and
- (f) a nucleotide sequence encoding a polypeptide consisting of a portion of the complete HLF amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123 wherein said portion include a combination of any of the amino terminal and carboxy terminal deletions in (d) and (e), above.

6. The nucleic acid molecule of claim 1 wherein said polynucleotide has the complete nucleotide sequence of the cDNA clone contained in ATCC Deposit No. 209123.

7. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence encoding the HLF polypeptide having the complete amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123.

8. The nucleic acid molecule of claim 1 wherein said polynucleotide has the nucleotide sequence encoding the extracellular domain of the HLF polypeptide having the amino acid sequence encoded by the cDNA clone contained in ATCC Deposit No. 209123.

9. An isolated nucleic acid molecule comprising a polynucleotide which hybridizes under stringent hybridization conditions to a polynucleotide having a nucleotide sequence identical to a nucleotide sequence in (a), (b), (c), (d), or (e) of claim 1 wherein said polynucleotide which hybridizes does not hybridize under stringent hybridization conditions to a polynucleotide having a nucleotide sequence consisting of only A residues or of only T residues.

10. An isolated nucleic acid molecule comprising a polynucleotide which encodes the amino acid sequence of an epitope-bearing portion of a HLF polypeptide having an amino acid sequence in (a), (b), (c), (d), or (e) of claim 1.

11. The isolated nucleic acid molecule of claim 10, which encodes an epitope-bearing portion of a HLF polypeptide wherein the amino acid sequence of said portion is selected from the group of sequences in SEQ ID NO:2 consisting of: about Ser-1 to about Thr-8, about Thr-9 to about Lys-18, about Thr-23 to about His-31, about Phe-32 to about Leu-40, about Cys-43 to about Val-51, about Thr-56 to about Tyr-68, about Gln-75 to about Leu-84, about Tyr-126 to about Ala-135, about Ser-137 to about Leu-146, and about Ser-148 to about Lys-157.

12. A method for making a recombinant vector comprising inserting an isolated nucleic acid molecule of claim 1 into a vector.

13. A recombinant vector produced by the method of claim 12.

14. A method of making a recombinant host cell comprising introducing the recombinant vector of claim 13 into a host cell.

15. A recombinant host cell produced by the method of claim 14.

16. A recombinant method for producing a HLF polypeptide, comprising culturing the recombinant host cell of claim 15 under conditions such that said polypeptide is expressed and recovering said polypeptide.

17. An isolated HLF polypeptide comprising an amino acid sequence at least 95% identical to a sequence selected from the group consisting of:

(a) the amino acid sequence of the HLF polypeptide having the complete amino acid sequence shown in SEQ ID NO:2 (i.e., positions 1 to 157 of SEQ ID NO:2) or the complete amino acid sequence encoded by the cDNA clone contained in the ATCC Deposit No. 209123;

(b) the amino acid sequence of the predicted extracellular domain of the HLF polypeptide having the amino acid sequence shown in SEQ ID NO:2 (i.e., positions 1 to 101 of SEQ ID NO:2) or as encoded by the cDNA clone contained in the ATCC Deposit No. 209123;

(c) the amino acid sequence of the predicted transmembrane domain of the HLF polypeptide having the amino acid sequence shown in SEQ ID NO:2 (i.e., positions 102 to 121 of SEQ ID NO:2) or as encoded by the cDNA clone contained in the ATCC Deposit No. 209123;

(d) the amino acid sequence of the predicted intracellular domain of the HLF polypeptide having the amino acid sequence shown in SEQ ID NO:2 (i.e., positions 122 to 157 of SEQ ID NO:2) or as encoded by the cDNA clone contained in the ATCC Deposit No. 209123; and

(e) the amino acid sequence of a soluble HLF polypeptide having the extracellular and intracellular domains but lacking the transmembrane domain.

18. An isolated polypeptide comprising an epitope-bearing portion of the HLF protein, wherein said portion is selected from the group consisting of: a polypeptide comprising amino acid residues from about Ser-1 to about Thr-8, about Thr-9 to about Lys-18, about Thr-23 to about His-31, about Phe-32 to about Leu-40, about Cys-43 to about Val-51, about Thr-56 to about Tyr-68, about Gln-75 to about Leu-84, about Tyr-126 to about Ala-135, about Ser-137 to about Leu-146, and about Ser-148 to about Lys-157 of SEQ ID NO:2.

19. An isolated antibody that binds specifically to a HLF polypeptide of claim 17.

20. An isolated nucleic acid molecule comprising a polynucleotide having a sequence at least 95% identical to a sequence selected from the group consisting of:

- (a) the nucleotide sequence of clone HAGFE38R (SEQ ID NO:4);
- (b) the nucleotide sequence of a portion of the sequence shown in Figures 1A and 1B (SEQ ID NO:1) wherein said portion comprises at least 50 contiguous nucleotides from nucleotide about 1 to about 220 and from about 400 to 2199;
- (c) the nucleotide sequence of a portion of the sequence shown in Figures 1A and 1B (SEQ ID NO:1) wherein said portion consists of residues 1 to 2199, 1 to 1500, 1 to 1000, 1 to 500, 1 to 250, 250 to 2199, 250 to 1500, 250 to 1000, 250 to 500, 500 to 2199, 500 to 1500, 500 to 1000, 1000 to 2199, and 1000 to 1500; and
- (d) a nucleotide sequence complementary to any of the nucleotide sequences in: (a), (b), or (c) above.

21. A method for diagnosing cancer in a human comprising,
(a) assaying HLF gene expression level in cells or body fluid of an individual; and
(b) comparing the HLF gene expression level with a standard HLF gene expression level, whereby an increase or decrease in the assayed HLF gene expression level compared to the standard expression level is indicative of cancer in the tissue type assayed.